



Department of Health and Mental Hygiene

Family Health Administration

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CHILD DEATH REPORT 2002

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ACKNOWLEDGEMENTS

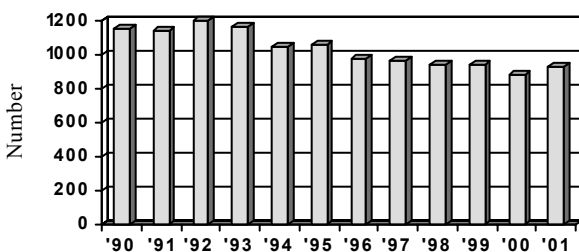
This Report was prepared by Maureen C. Edwards, MD, MPH and the staff of the Center for Maternal and Child Health of the Department of Health and Mental Hygiene. Rolaine Nelson, MD, M.P.H., Preventive Medicine Resident, Johns Hopkins University assisted with the preparation of data tables. Data was provided by Dr. Isabelle Horon and Mr. Hal Sommers of the Vital Statistics Administration. Dr. Horon graciously performed the statistical analyses of the mortality rates.

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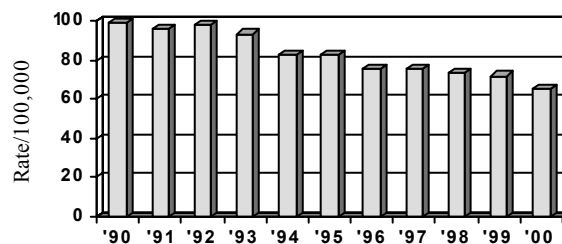
OVERALL TRENDS

In 2001 there were 938 deaths of infants and children under the age of 18 years in Maryland. This age range includes both infants under one year of age and children until their eighteenth birthday. This range has been selected for this report because it encompasses the ages for which the State Child Fatality Review Team has responsibility. Overall there has been a gradual decrease in the number and rate of both infant and child deaths in the State over the past decade. It is important to note that many of these deaths in childhood could be prevented with appropriate interventions in both the public and private sectors.

Maryland Deaths < 18 Years

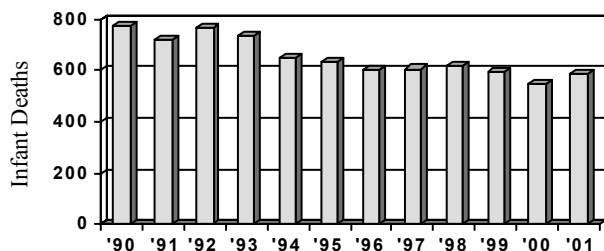


Maryland Child Death Rate, < 18 Years

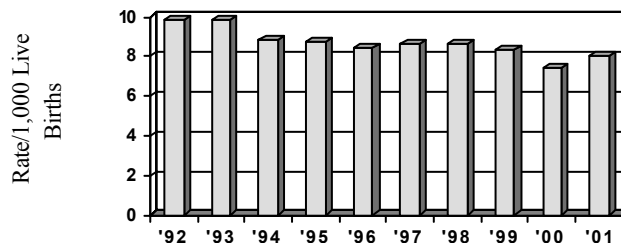


Mortality rates are expressed as the number of deaths per a population measure in a given time period. Infant mortality rates are traditionally expressed as the number of deaths in the first year of life per 1000 live-births during the same year. However, other mortality rates are expressed as the number of deaths per the number in the population, usually the number per 100,000 in the same time period. The average mortality rate for infants less than one year of age has decreased by 10.8% between the five year epoch 1991-1995 and the period 1996-2000. For children, 1 through 17 years, this decrement has been 21.4% in the same time frame. This demonstrates a statistically significant improvement in the child fatality rate throughout the 1990s. The improvement has occurred in each age group as seen in the figures for infants and for older children below as well as the data in the tables following.

Maryland Infant Deaths



Maryland Infant Mortality Rate



**NUMBER OF INFANT, NEONATAL AND POSTNEONATAL DEATHS BY RACE, DEATH RATES*
AND PERCENT CHANGE IN RATES** FROM 1991-1995 TO 1996-2000, MARYLAND.**

	<i>Number of deaths</i>		<i>Death rates*</i>		<i>Percent change**</i>	
	1991-1995	1996-2000	1991-1995	1996-2000		
Infant mortality*						
All races***	3504	2972	9.3	8.3	-10.8	****
White	1506	1150	6.3	5.3	-16.0	****
Black	1922	1730	15.8	14.7	-6.9	****
Neonatal mortality*						
All races***	2382	2126	6.3	5.9	-6.1	****
White	1010	793	4.2	3.7	-13.7	****
Black	1322	1261	10.9	10.7	-1.3	
Postneonatal mortality*						
All races***	1122	846	3.0	2.4	-20.7	****
White	496	357	2.1	1.6	-20.8	****
Black	600	469	4.9	4.0	-19.1	****

*Per 1,000 live births

**Percent change is based on the exact rates and not the rounded rates presented here

***Includes races other than White and Black

****Rates for 1991-1995 and 1996-2000 differ significantly (p<.05)

NUMBER OF DEATHS, DEATH RATES* AND PERCENT CHANGE IN RATES
FOR CHILDREN AGES 1-17 YEARS, MARYLAND, 1991-1995 AND 1996-2000.**

Age group	<i>Number of deaths</i>		<i>Death rates*</i>		<i>Percent change**</i>
	1991-1995	1996-2000	1991-1995	1996-2000	
1-17 years	2098	1735	33.9	26.6	-21.4 ***
1-4 yr	657	446	43.2	31.9	-26.1 ***
5-9 yr	347	292	19.7	15.4	-21.6 ***
10-14 yr	424	370	26.1	20.3	-22.3 ***
15-17 yr	670	627	74.1	60.3	-18.6 ***

*Per 100,000 population in specified age group.

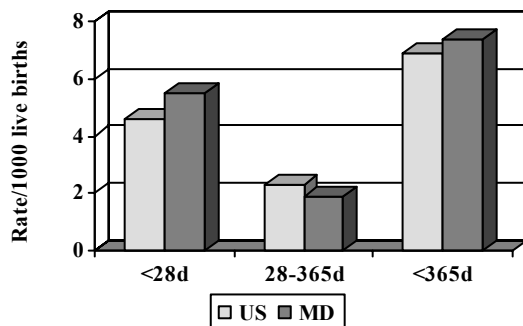
**Percent change is based on the exact rates and not the rounded rates presented here.

***Rates for 1991-1995 and 1996-2000 differ significantly (p<.05).

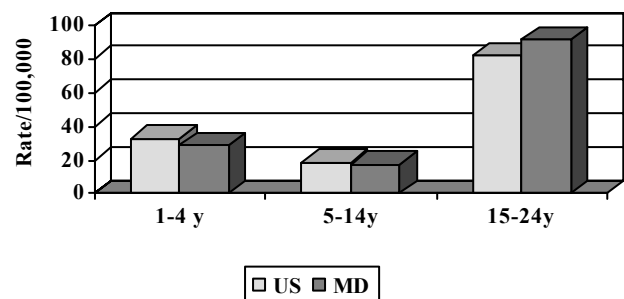
COMPARISON TO NATIONAL STATISTICS

The absolute numbers of child deaths and mortality rates in Maryland have decreased throughout the 1990's. Overall mortality of Maryland's infants and children approximated that of the nation as a whole in 2000, the most recent year for which national data is available. In the age groups 1-4 years and 5-14 years Maryland's rates were slightly better than U.S. figures. However for infants, adolescents and young adults, the Maryland rates exceeded the national average.

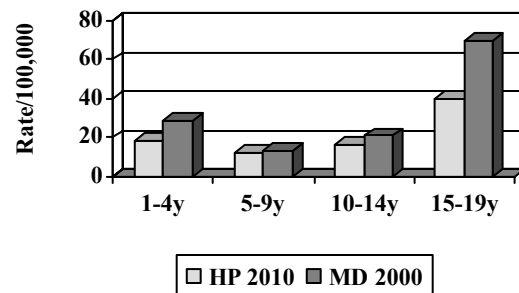
Infant Mortality, 2000



Child/Youth Mortality, 2000

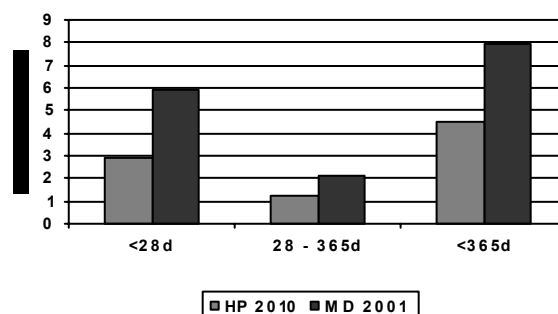


Healthy People 2010 Goals Child/Adolescent Deaths



National objectives for infant and child mortality have been established in the Healthy People 2010 project of the United States Department of Health and Human Services. It will require considerable progress for Maryland to reach these objectives as can be seen in the figures below. This is particularly true in the youngest children and the adolescent population.

Healthy People 2010 Goals, Infant Deaths

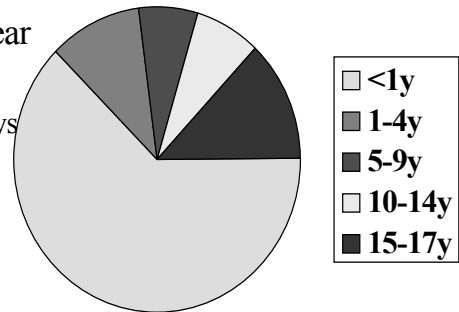


DEMOGRAPHICS

Maryland Child Deaths, <18 years, 2001

In order to avoid preventable deaths in childhood it is necessary to understand both the causes of death and which children are at particular risk. A breakdown of the age at death for children in Maryland in 2001 is represented adjacent. Of the 938 deaths, 62.6% occurred in the first year of life with 46.3% of the total occurring in the first month of life. Therefore, efforts to lower overall child fatalities must be coordinated with activities specifically aimed at addressing infant deaths. As noted above, although mortality rates fall after infancy, they rise during adolescence. Teens and young adults have approximately 2 to 4 times the number of fatalities as seen in younger children.

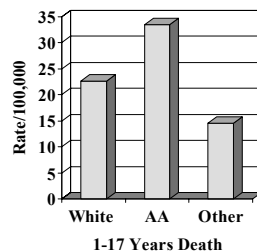
- 938 Total <18 years
- 587 Infants, <1 year
 - 434 ≤ 28 days
 - 153 – 28-365 days
- 98 1-4 years
- 62 5-9 years
- 72 10-14 years
- 119 15-17 years



Gender and race also influence the number and rate of deaths. In 2000, of the 333 deaths in 1 to 18 year olds, 59.7% of deaths occurred in boys. This trend is also seen in infancy. African-American children are at increased risk of dying both in the first year of life and in later childhood. In 2001, African-American infants died at 2.4 times the rate of white infants. This ratio remains elevated at 1.5 in children 1 through 17 years of age. The basis of these associations is not completely understood but must be addressed to prevent childhood deaths.

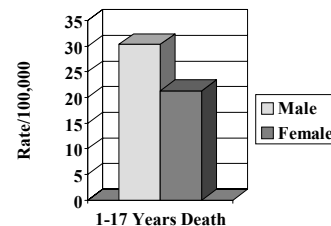
Child Deaths: Race, 2000

- African-American 143
- White 181 deaths
- Other 9 deaths
- Ratio: AA:W 1.5



Child Deaths: Gender, 2000

- 199 males
- 134 females
- Ratio 1.4:1



CAUSE OF DEATH

Understanding the underlying cause of death in childhood is necessary in order to develop strategies to prevent these events when possible. Specific causative factors vary significantly depending on the age of the child. In infancy, the leading causes of mortality relate to prematurity and low birthweight in the first month of life. In Maryland, excess numbers of preterm and low birthweight infants account for high infant mortality rather than excess mortality in each weight group. After the first month of life, Sudden Infant Death Syndrome (SIDS) and congenital anomalies are the leading causes of death. SIDS is of particular public health concern because it has been identified as a cause of death which can be reduced through safe sleeping practices for infants. In Maryland, the number of deaths from SIDS has decreased throughout the 1990s with a 32.5% decrease between the time periods 1992-1996 and 1997-2001. A breakdown of leading causes of infant deaths for 2001 is presented in the adjoining table. Of particular note in the post-neonatal period is the occurrence of 10 infant homicides in 2001. Homicides are almost always the result of child abuse in this age group. The increased number of infant homicides nationally may be due to more accurate diagnoses in recent years but may also be due to increased occurrence. A more detailed review of infant mortality is presented in the annual Infant Mortality Report prepared by the DHMH Vital Statistics Administration. It can be found at <http://www.mdpublichealth.org/vsa>.

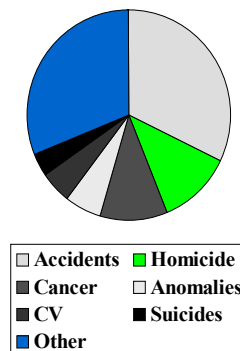
**Leading Causes
Infant Death, MD 2001**

Neonatal: 434	Postneonatal: 153	INFANT: 587
Short Gestation, LBW: 123	SIDS: 46	Short Gestation, LBW: 128
Congenital Malformation: 67	Congenital Malformation: 25	Congenital Malformation: 92
Maternal complications: 42	Homicide: 10	SIDS: 55
Complications of placenta, cord: 34	Short gestation, LBW: 5	Maternal complications: 43
Bacterial sepsis: 27		Complication of placenta, cord: 34

In childhood, injuries or death resulting from external causes are the most common etiologies of death in every age group. These include unintentional injuries as well as homicides and suicides. Data adjoining displays the cases of child death in 2001. A ranking of total deaths for the three year period 1999-2001 in Maryland is presented on the following page.

**Cause of Death, 1-17 years
2001 – Total 351**

- 114 Accidents
 - 85 transport
 - 29 non-transport
- 41 Homicide
- 38 Cancer
- 20 Anomalies
- 18 Cardiovascular
- 13 Suicides
- 107 other



Cause of Death, 1-18 years, Maryland 1999-2001

Age	1-4	5-9	10-14	15-17
Rank				
1	Unintentional Injury (59)	Unintentional Injury (53)	Unintentional injury (54)	Unintentional injury (149)
2	Congenital Malformations (30)	Malignant Neoplasms (42)	Malignant Neoplasm (30)	Homicide (74)
3	Malignant Neoplasms (26)	Major Cardiovascular Diseases (9)	Homicide (18) Major Cardiovascular Disease (18)	Suicide (37)
4	Homicide (24)	Congenital Malformations (8)	Suicide (14)	Malignant Neoplasm (20)
5	Major Cardiovascular Disease (17)	Septicemia (6)	Congenital Malformations (8)	Events of Undetermined Intent (16)

In order to prevent fatal injuries, a more detailed understanding of injury related deaths is necessary. Data regarding specific causes is demonstrated below for 1999-2001. In order to develop plans for prevention initiatives, detailed review of individual cases may reveal potential opportunities for intervention at the local or State level. As seen in the accompanying table, the leading cause of injury associated death in childhood is motor vehicle accidents. Fires accounted for the next largest number of fatal unintentional injuries. Of the 151 deaths determined to be homicides in this time period 31 were in infants less than 1 year of age, 23 in children 1-4 years and 2 in children between 5 and 9 years. Many, but not all, of these deaths may be attributed to child abuse and neglect. In addition, abuse may be a factor in deaths of undetermined intent. The greatest number of homicides occur in older adolescents where other factors are generally involved.

Deaths: Injury <18 years, 1999-2001

- Unintentional Transport
 - MVA: 194
 - Other: 35
 - **Total: 229**
- Unintentional Non-Transport
 - Falls: 10
 - Drowning: 25
 - Fire: 41
 - Poisoning: 5
 - Other: 41
 - **Total: 122**
- Suicide
 - Firearm: 24
 - Other: 28
 - **Total: 52**
- Homicide
 - Firearms: 86
 - Other: 65
 - **Total: 151**
- Uncertain intent: 46

CHILD DEATHS IN MARYLAND JURISDICTIONS

Many activities to avoid child deaths will occur on the local level through public health and public policy interventions. Specific causes of death may also vary in different geographic locations. Information demonstrating the occurrence of infant and child deaths by jurisdiction is included in the following pages. In these table and maps, an average rate over five years is used for comparison because the relatively low number of deaths in any jurisdiction in a single year may result in considerable variation which may not indicate an actual significant change. The tables also include an analysis of the change in rate in the jurisdiction over the 1990s decade.

NUMBER OF INFANT DEATHS, INFANT MORTALITY RATES* AND PERCENT CHANGE IN RATES BY REGION AND POLITICAL SUBDIVISION, MARYLAND, 1991-1995 AND 1996-2000.**

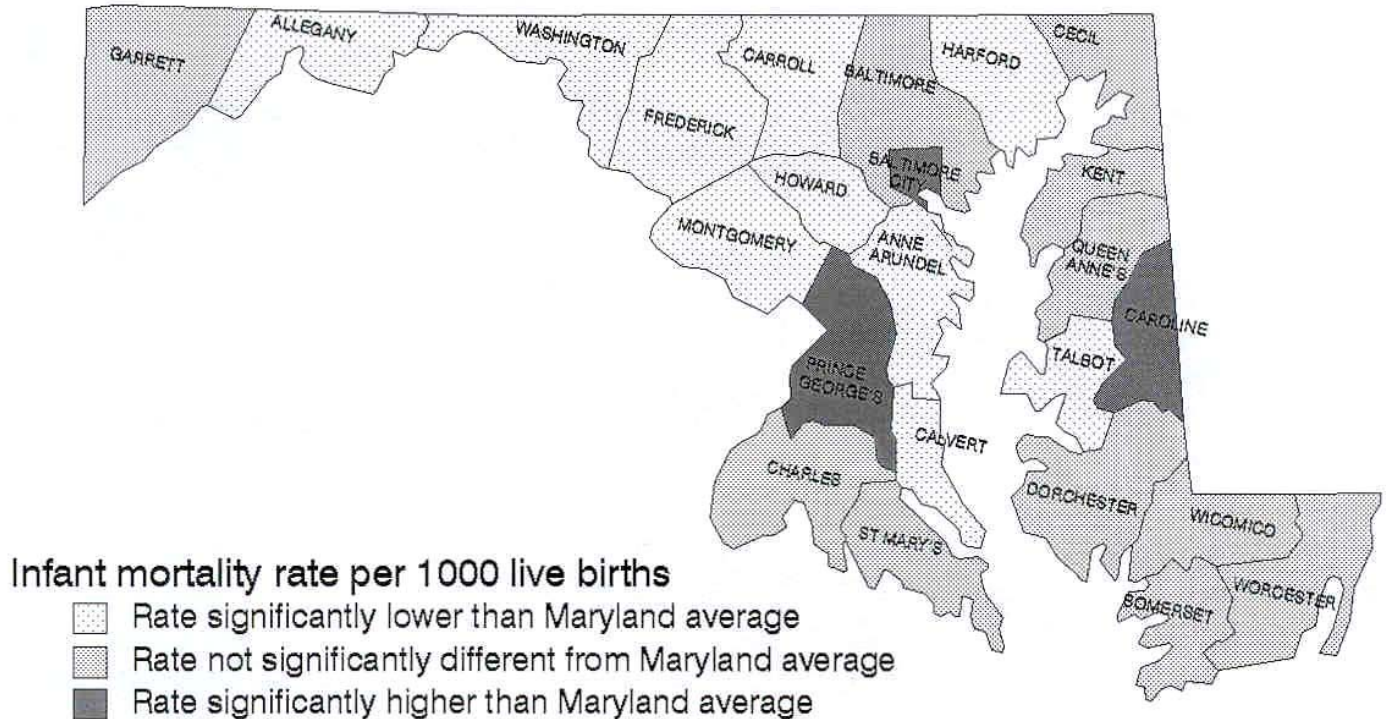
Region and political subdivision	Number of infant deaths		Death rates*		Percent change**
	1991-1995	1996-2000	1991-1995	1996-2000	
Maryland	3505	2972	9.3	8.3	-10.8 ***
Northwest Area	203	137	7.5	5.1	-32.9 ***
Garrett	14	13	7.2	7.4	2.9
Allegany	42	17	9.9	4.5	-54.9 ***
Washington	66	40	8.3	5.0	-39.3 ***
Frederick	81	67	6.4	5.0	-22.1
Baltimore Metro Area	1616	1414	8.9	8.4	-5.3
Baltimore City	833	607	13.6	12.6	-6.9
Baltimore County	355	349	7.5	7.7	1.9
Anne Arundel	223	218	6.9	6.6	-4.1
Carroll	50	53	5.3	5.6	6.9
Howard	62	92	3.7	5.4	43.7 ***
Harford	93	95	6.3	6.4	1.9
National Capital Area	1323	1068	10.5	8.7	-16.4 ***
Montgomery	455	380	7.4	6.2	-16.1 ***
Prince George's	868	688	13.4	11.3	-15.5 ***
Southern Area	151	140	7.9	7.3	-8.1
Calvert	25	26	5.7	5.5	-3.3
Charles	62	64	7.6	7.6	0.6
St. Mary's	64	50	9.9	8.2	-17.1
Eastern Shore Area	212	213	8.8	9.1	3.6
Cecil	44	48	7.8	8.6	10.7
Kent	5	7	4.5	7.1	59.6
Queen Anne's	17	20	7.9	8.5	7.6
Caroline	22	31	11.3	16.7	48.2
Talbot	18	9	9.7	5.3	-44.9
Dorchester	15	14	8.1	8.5	5.5
Wicomico	59	50	10.4	9.1	-12.8
Somerset	9	11	6.9	8.7	26.9
Worcester	23	23	9.3	9.3	0.6

*Per 1000 live births.

**Percent change is based on the exact rates and not the rounded rates presented here.

***Rates for 1991-1995 and 1996-2000 differ significantly (p<.05).

Comparison of County Infant Mortality Rates With the State Average, Maryland, 1996-2000*.



* Based on aggregate data for the 5 year period.

NUMBER OF DEATHS, DEATH RATES* AND PERCENT CHANGE IN RATES FOR
CHILDREN AGES 1-17 YEARS BY REGION AND POLITICAL SUBDIVISION,
MARYLAND, 1991-1995 AND 1996-2000.**

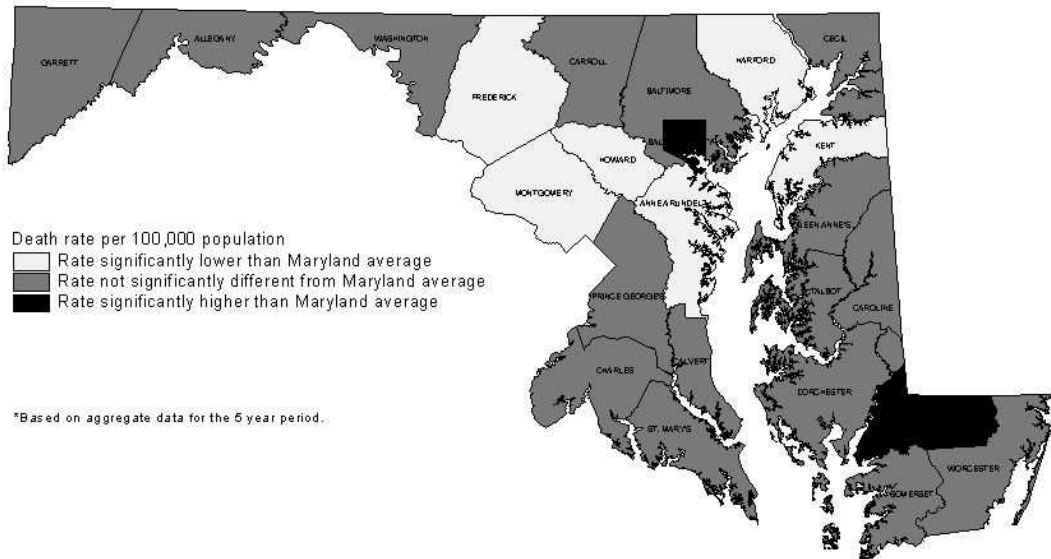
Region and political subdivision	<i>Number of deaths</i>		<i>Death rates*</i>		<i>Percent change**</i>
	1991-1995	1996-2000	1991-1995	1996-2000	
Maryland	2098	1736	36.0	28.2	-21.7 ***
Northwest Area	145	114	31.7	23.1	-27.1 ***
Garrett	16	10	43.7	27.3	-37.6
Allegany	28	24	35.5	31.8	-10.5
Washington	50	32	36.8	22.7	-38.4 ***
Frederick	51	48	24.7	19.9	-19.2
Baltimore Metro Area	1109	929	39.6	31.9	-19.4 ***
Baltimore City	539	436	63.4	55.2	-12.9 ***
Baltimore County	201	203	26.3	25.5	-3.0
Anne Arundel	171	125	32.9	22.4	-32.0 ***
Carroll	52	50	31.5	26.3	-16.4
Howard	62	53	24.3	17.6	-27.4
Harford	84	62	33.8	22.3	-33.9 ***
National Capital Area	539	453	29.7	23.5	-20.8 ***
Montgomery	204	153	22.3	15.7	-29.5 ***
Prince George's	335	300	37.2	31.4	-15.5 ***
Southern Area	118	107	35.4	28.2	-20.4
Calvert	23	30	28.6	30.3	6.2
Charles	52	42	35.3	25.7	-27.2
St. Mary's	43	35	40.9	29.9	-26.8
Eastern Shore Area	187	133	45.2	30.0	-33.6 ***
Cecil	39	30	39.3	27.5	-29.9
Kent	10	2	53.9	10.4	-80.8 ***
Queen Anne's	17	10	41.8	21.6	-48.2
Caroline	25	6	70.9	16.3	-77.0 ***
Talbot	12	8	38.3	23.8	-37.7
Dorchester	18	12	53.1	35.5	-33.2
Wicomico	30	40	32.4	41.0	26.5
Somerset	9	9	39.0	39.5	1.2
Worcester	27	16	69.2	36.1	-47.8 ***

*Per 100,000 population.

**Percent change is based on the exact rates and not the rounded rates presented here.

***Rates for 1991-1995 and 1996-2000 differ significantly (p<.05).

Comparison of County Death Rates for Children ages 1-17 Years with the State Average, Maryland, 1996-2000*



CLOSING

Although child deaths and death rates are declining in Maryland, the most common causes of death in children and adolescents are frequently related to preventable factors. Further in-depth analysis of these deaths and associated findings should help direct public efforts to decrease fatalities when possible. Upcoming reports will provide additional analysis of data provided by the Office of the Chief Medical Examiner and information derived from case reviews of Local Child Fatality Review Teams throughout Maryland.